Missouri Department of Natural Resources

Use Attainability Analysis

for

WBID 0202 Crooked Creek

Submitted by
MEC Water Resources

To
Missouri Department of Natural Resources
Water Protection Program

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad): Crooked CR.
Missouri Water Body Identification (WBID) Number: 0202
8-digit HUC: 20090415 County: Lincoln
Upstream Legal Description (from Table H): 11, 48N, 1W
Downstream Legal Description(from Table H): 10, 48N, 1E
Number of sites evaluated 3 4 sc
List all sites numbers, listed consecutively upstream to downstream: site1: Hwy U Bridge site3: Hample Rd. site2: 100m dnstream of site 01 site4: Hwy MM Bridge

II. Discharger Facility Information (list all permitted dischargers on the stream)

Discharger Facility Name(s): Glen Meadows
Discharger Permit Number(s): MO Ø128171

III. UAA Surveyor (please print legibly)

Name of Surveyor Renee Martin Telephone Number: 573-875-7844
Organization/Employer: AE Solutions
Position: Env. Specialist

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: Renee Martin **Date:** 10/02/07

RMC 10-15-07

WBID # 0202

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/28/07 1430	Site Location Description (e.g., road crossing): Hwy 11 Bridge
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: clear	Facility Name: Glen Meadows
Weather Conditions for Past 10 days: rain/clear	Permit Number: MO 0128171
Drought Conditions?: No drought X; Phase I □; Phase II □; Phase III □; Phase IV □; Unknown □	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 4312503	Northing (UTM Y): 0676089	Horizontal Accuracy: (EPE / FOM / PDOP)	23 ~~Meters~~ ~~SRH~~ ft
Site 11	Easting (UTM X): 4312610	Northing (UTM Y): 0676277	Horizontal Accuracy: (EPE / FOM / PDOP)	18 ~~Meters~~ ~~SRH~~ ft

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_233	upstream	101_234	dnstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0202

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

30 % Cobble	60 % Gravel	10 % Sand	% Silt	% Mud/Clay	% Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

none

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☐ None	☒ Other: dry
Color:	☐ Clear	☐ Green	☐ Gray	☐ Milky	☒ Other: dry
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☐ None	☒ Other: dry

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0202

Site # 01

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9/28/07

Organization: AE Solutions Position: Env. Specialist

RWC 10-16-07

WBID # 0702

Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/28/07 1445	Site Location Description (e.g., road crossing): 100 m dnstream of site 01
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: Clear	Facility Name: Glen Meadows
Weather Conditions for Past 10 days: rain/clear	Permit Number: MO 0128171
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 4312685	Northing (UTM Y): 0676305	Horizontal Accuracy: (EPE / FOM / PDOP)	16 JRH ~~Meters~~ ft
Site 11	Easting (UTM X): 4312812	Northing (UTM Y): 0676371	Horizontal Accuracy: (EPE / FOM / PDOP)	21 JRH ~~Meters~~ ft

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101_285	upstream	101_286	downstream	101_287	field road
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0202

Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☒ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: Field road @ Trans. 02				

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
10	60	30			

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☐ Clear	☐ Green	☐ Gray	☐ Milky	☒ Other: Brown
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

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WBID # 0202
Site # 02

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Habick Date of Survey: 9/28/07

Organization: AE Solutions Position: Env. Specialist

RWC 10-18-07

WBID # 0202
Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 9/28/07 1510	Site Location Description (e.g., road crossing): Hample Rd
Personnel (Data Collectors): JH/JF	
Current Weather Conditions: clear	Facility Name: Glen Meadows
Weather Conditions for Past 10 days: rain/clear	Permit Number: MO 0128171
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X): 431085	Northing (UTM Y): 0679127	Horizontal Accuracy: (EPE / FOM / PDOP) 23	~~Meters~~ ft
Site 11	Easting (UTM X): 431097	Northing (UTM Y): 0679130	Horizontal Accuracy: (EPE / FOM / PDOP) 24	~~Meters~~ ft

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101.258	upstream	101.259	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0202
Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

10 % Cobble	10 % Gravel	10 % Sand	% Silt	70 % Mud/Clay	% Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae duckweed

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☐ Clear	☐ Green	☐ Gray	☒ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☒ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0202
Site # 03

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: Jennifer Hrabik Date of Survey: 9/28/07

Organization: AE Solutions Position: Env. Specialist

QAC 10-15-07

WBID # 0202

Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization

(must be completed for each site)

Date & Time: 10/1/07 0800	Site Location Description (e.g., road crossing): Hwy MM Bridge
Personnel (Data Collectors): JH / JF	
Current Weather Conditions: Clear	Facility Name:
Weather Conditions for Past 10 days:	Permit Number:
Drought Conditions?: No drought □; Phase I □; Phase II □; Phase III □; Phase IV □; Unknown □	

Site Location:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)				
Site 01	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy: (EPE / FOM / PDOP)	Meters
Site 11	Easting (UTM X):	Northing (UTM Y):	Horizontal Accuracy: (EPE / FOM / PDOP)	Meters

Photos:

Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
101-290	upstream	101-291	downstream		
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

WBID # 0202
Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Rural Residential
☐ Campgrounds	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ Boating accesses	☐ Fence	☐ No trespass sign	☒ Steep slopes	☐ Other:
Comments:				

Evidence of Human Use*: (Attach photos and reference in "Photos" section)

☐ Roads	☐ Foot paths/prints	☐ Dock/platform	☐ Camping Sites	☐ Rope swings
☐ RV / ATV Tracks	☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Livestock Watering
Comments / Other: none				

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	70 % Sand	% Silt	30 % Mud/Clay	% Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

algae

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☒ Other: Brown
Bottom Deposit:	☐ Sludge	☐ Solids	☒ Fine sediments	☐ None	☐ Other:
Surface Deposit:	☒ Oil	☐ Scum	☐ Foam	☐ None	☐ Other:

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

WBID # 0707.

Site # 04

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet B – Site Characterization (continued)

Additional Stream Morphology: (Record isolated pools or other features identified during the survey that may support recreational uses)

Channel Feature	Distance from access location (m)	Width (m)	Length (m)	Median Depth (m)	Max Depth (m)

Comments: (Please record any additional comments here.)

Please verify that you have completed all sections, checked all applicable boxes, and that the form is complete.

Surveyor's Signature: [signature] Date of Survey: 10/6/07

Organization: AE SOLUTIONS Position: FIELD TECH

QAQC 10-19-07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0202 Site #: 0202_01 (WBID_Site#)

Estimated Channel Incision: 2 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 4312503 UTM Y: 0167689
Horizontal Accuracy Estimate (GPS Data Quality): +/- 23 (feet)

GPS Location (taken at transect 11):
UTM X: 4312610 UTM Y: 0167227
Horizontal Accuracy Estimate (GPS Data Quality): +/- 18 (feet)

Average Stream Width: 3.1 (meters) Length of Survey Segment: 150 (meters)
(To determne Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/28/07 Time: 1430

Dissolved Oxygen: _____ (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temp.: _____ (°C)

DRY

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.25	0.00	0.36	0.00	0.31	0.00	0.40	0.00	0.15	0.00	0.26	0.00	0.17	0.00	0.33	0.00	0.33	0.00	0.56	0.00	0.25	0.00
2	0.50	|	0.72	|	0.62	|	0.80	|	0.30	|	0.52	|	0.34	|	0.66	|	0.66	|	1.12	|	0.50	|
3	0.75	|	1.08	|	0.93	|	1.20	|	0.45	|	0.78	|	0.51	|	0.99	|	0.99	|	1.68	|	0.75	|
4	1.00	|	1.44	|	1.24	|	1.60	|	0.60	|	1.04	|	0.68	|	1.32	|	1.32	|	2.24	|	1.00	|
5	1.25	|	1.80	|	1.55	|	2.00	|	0.75	|	1.30	|	0.85	|	1.65	|	1.65	|	2.80	|	1.25	|
6	1.50	|	2.16	|	1.86	|	2.40	|	0.90	|	1.56	|	1.02	|	1.98	|	1.98	|	3.36	|	1.50	|
7	1.75	|	2.52	|	2.17	|	2.80	|	1.05	|	1.82	|	1.19	|	2.31	|	2.31	|	3.92	|	1.75	|
8	2.00	|	2.88	|	2.48	|	3.20	|	1.20	|	2.08	|	1.36	|	2.64	|	2.64	|	4.48	|	2.00	|
9	2.25	⊥	3.24	⊥	2.79	⊥	3.60	⊥	1.35	⊥	2.34	⊥	1.53	⊥	2.97	⊥	2.97	⊥	5.04	⊥	2.25	⊥
Right Bank	2.50	0	3.60	0	3.10	0	4.00	0	1.50	0	2.60	0	1.70	0	3.35	0	3.30	0	5.65	0	2.50	0
Feature Type (riffle, run, or pool)	dry		dry		dry		dry		dry		dry		dry		dry		dry		dry		dry	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0depth). This width is the wetted width
GPS location corresponds to Transect 01 and Transect 11--Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

B n C 10-15-07

Signed: Jennifer Drahota Date: 10/10/07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: ~~0098~~ 0202 IRH Site #: ~~0098~~ 0202 .02
(WBID_Site#)

Estimated Channel Incision: 2 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 4312685 UTM Y: 0676305
Horizontal Accuracy Estimate (GPS Data Quality): +/- 16 (feet)

GPS Location (taken at transect 11):
UTM X: 4312912 UTM Y: 0676371
Horizontal Accuracy Estimate (GPS Data Quality): +/- 21 (feet)

Average Stream Width: 3.3 (meters)
(To determne Length of Reach)

Length of Survey Segment: 150 (meters)
(20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/28/07 Time: 1445

Dissolved Oxygen: _____ (mg/L)

Dissolved Oxygen: _____ (% sat)

Specific Cond: _____ (µS/cm)

Water Temp.: _____ (°C)

DRY

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.53	0.00	0.18	0.00	0.52	0.00	0.65	0.00	0.08	0.01	0.30	0.00	0.13	0.00	0.24	0.00	0.38	0.00	0.40	0.00	0.27	0.00
2	1.06	|	0.36	|	1.04	|	1.30	|	0.16	0.02	0.60	|	0.26	|	0.48	|	0.76	|	0.80	|	0.54	|
3	1.59	|	0.54	|	1.56	|	1.95	|	0.24	0.06	0.90	|	0.39	|	0.72	|	1.14	|	1.20	|	0.81	|
4	2.12	|	0.72	|	2.08	|	2.60	|	0.32	0.07	1.20	|	0.52	|	0.96	|	1.52	|	1.60	|	1.08	|
5	2.65	|	0.90	|	2.60	|	3.25	|	0.40	0.10	1.50	|	0.65	|	1.20	|	1.90	|	2.00	|	1.35	|
6	3.18	|	1.08	|	3.12	|	3.90	|	0.48	0.08	1.80	|	0.78	|	1.44	|	2.28	|	2.40	|	1.62	|
7	3.71	|	1.26	|	3.64	|	4.55	|	0.56	0.06	2.10	|	0.91	|	1.68	|	2.66	|	2.80	|	1.89	|
8	4.24	|	1.44	|	4.16	|	5.20	|	0.64	0.04	2.40	|	1.04	|	1.92	|	3.04	|	3.20	|	2.16	|
9	4.77	⊥	1.62	⊥	4.68	⊥	5.85	⊥	0.72	0.01	2.70	⊥	1.17	⊥	2.16	⊥	3.42	⊥	3.60	⊥	2.43	⊥
Right Bank	5.30	0	1.80	0	5.20	0	6.50	0	0.85	0	3.00	0	1.30	0	2.40	0	3.80	0	4.00	0	2.70	0
Feature Type (riffle, run, or pool)	dry		dry		dry		dry		pool		dry		dry		dry		dry		dry		dry	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0depth). This width is the wetted width
GPS location corresponds to Transect 01 and Transect 11; Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

10-15-07

Signed: Jennifer Strabuk Date: 10/10/07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0202 Site #: 0202_03 (WBID_Site#)

Estimated Channel Incision: 3 (m) (height between low bank width and water)

GPS Location (taken at transect 1):
UTM X: 4311085 UTM Y: 0679127
Horizontal Accuracy Estimate (GPS Data Quality): +/- 23 (feet)

GPS Location (taken at transect 11):
UTM X: 4310971 UTM Y: 0679130
Horizontal Accuracy Estimate (GPS Data Quality): +/- 24 (feet)

Average Stream Width: 4.0 (meters) (To determne Length of Reach)

Length of Survey Segment: 150 (meters) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 9/28/07 Time: 1510

Dissolved Oxygen: 5.37 (mg/L)

Dissolved Oxygen: 63.4 (% sat)

Specific Cond: 364.7 (µS/cm)

Water Temp.: 23.0 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.16	0.04	1.10	0.23	0.90	0.15	0.78	0.12	0.13	0.01	0.09	0.80	0.32	0.03	0.08	0.00	0.27	0.01	0.06	0.01	0.48	0.30
2	0.32	0.06	2.20	0.71	1.80	0.62	1.56	0.29	0.26	0.03	0.18	<0.01	0.64	0.05	0.16		0.54	0.01	0.12	0.01	0.96	0.61
3	0.48	0.00	3.30	0.95	2.70	0.89	2.34	0.72	0.39	0.10	0.27		0.96	0.05	0.24		0.81	0.02	0.18	0.02	1.44	0.75
4	0.64	0.00	4.40	>1	3.60	>1	3.12	0.89	0.52	0.10	0.36		1.28	0.08	0.32		1.08	0.05	0.24	0.04	1.92	>1
5	0.80	0.01	5.50	>1	4.50	>1	3.90	>1	0.65	0.06	0.45		1.60	0.08	0.40		1.35	0.07	0.30	0.02	2.40	>1
6	0.96	0.01	6.60	>1	5.40	>1	4.68	0.81	0.78	0.05	0.54		1.92	0.07	0.48		1.62	0.12	0.36	0.02	2.88	>1
7	1.12	0.02	7.70	0.83	6.30	0.91	5.46	0.79	0.91	0.01	0.63		2.24	0.07	0.56		1.89	0.11	0.42	0.01	3.36	>1
8	1.28	0.04	8.80	0.62	7.20	0.53	6.24	0.85	1.04	0.01	0.72		2.56	0.06	0.64		2.16	0.10	0.48	0.01	3.84	0.95
9	1.44	0.08	9.90	0.19	8.10	0.12	7.02	0.21	1.17	0.02	0.81		2.88	0.04	0.72		2.43	0.10	0.54	0.01	4.32	0.29
Right Bank	1.60	0	11.00	0	9.00	0	7.80	0	1.35	0	0.90	0	3.21	0	0.85	0	2.70	0	0.60	0	4.85	0
Feature Type (riffle, run, or pool)	pool		pool		pool		pool		pool		pool		pool		dry		pool		pool		pool	

Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (0 depth). This width is the wetted width
GPS location corresponds to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

AHE 10-18-07

Signed: Jennifer Drabek Date: 10/10/07

Recreational Use Attainability Analysis Field Survey Sheet

Waterbody ID: 0202 Site #: 0202_04 (WBID_Site#)

Estimated Channel Incision: 2 (m) (height between low bank width and water)

GPS Location (taken at transect 1):

Trans 11 UTM X: 4311299 UTM Y: 0681950

Horizontal Accuracy Estimate (GPS Data Quality): +/- 104 (feet) ①

GPS Location (taken at transect 11):

Trans 01 UTM X: 4311172 UTM Y: 0681896

Horizontal Accuracy Estimate (GPS Data Quality): +/- 19 (feet)

JH 10/1/07

Average Stream Width: 5.0 (meters) Length of Survey Segment: 150 (meters)
(To determne Length of Reach) (20x average stream width)

Field Staff: JH/JF

Dissolved Oxygen

Date: 10/1/07 Time: 0800

Dissolved Oxygen: 6.13 (mg/L)

Dissolved Oxygen: 66.3 (% sat)

Specific Cond: 398.4 (µS/cm)

Water Temp.: 18.2 (°C)

Transect Cross-Section

Station	01		02		03		04		05		06		07		08		09		10		11	
	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)	Distance (m)	Depth (m)
Left Bank	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.26	0.06	0.12	0.02	0.56	0.27	0.62	0.09	0.58	0.20	0.46	0.04	0.59	0.15	0.39	0.14	0.57	0.14	0.1	0.01	0.64	0.14
2	0.52	0.15	0.24	0.03	1.12	0.25	1.24	0.11	1.16	0.25	0.92	0.10	1.18	0.17	0.78	0.22	1.02	0.17	0.2	0.02	1.28	0.20
3	0.78	0.12	0.36	0.04	1.68	0.23	1.86	0.12	1.74	0.26	1.38	0.17	1.77	0.12	1.17	0.21	1.53	0.20	0.3	0.02	1.92	0.34
4	1.04	0.10	0.48	0.04	2.24	0.22	2.48	0.20	2.32	0.34	1.84	0.23	2.36	0.14	1.56	0.22	2.04	0.21	0.4	0.03	2.56	0.42
5	1.3	0.06	0.6	0.05	2.8	0.23	3.1	0.26	2.90	0.36	2.3	0.30	2.95	0.10	1.95	0.34	2.55	0.23	0.5	0.04	3.2	0.25
6	1.56	0.04	0.72	0.05	3.36	0.24	3.72	0.32	3.48	0.35	2.76	0.40	3.54	0.10	2.34	0.30	3.06	0.19	0.6	0.04	3.84	0.20
7	1.82	0.08	0.84	0.06	3.92	0.25	4.34	0.35	4.06	0.36	3.22	0.50	4.13	0.11	2.73	0.22	3.57	0.16	0.7	0.03	4.48	0.16
8	2.08	0.08	0.96	0.04	4.48	0.20	4.96	0.24	4.64	0.36	3.68	0.58	4.72	0.15	3.12	0.11	4.08	0.14	0.8	0.03	5.12	0.10
9	2.34	0.04	1.80	0.04	5.04	0.10	5.58	0.14	5.22	0.11	4.14	0.50	5.31	0.14	3.51	0.05	4.59	0.13	0.9	0.02	5.76	0.09
Right Bank	2.65	0	1.20	0	5.55	0	6.25	0	5.80	0	4.65	0	5.90	0	3.90	0	5.10	0	1.00	0	6.40	0
Feature Type (riffle, run, or pool)	pool		run		pool		pool		pool		pool		pool		pool		pool		riffle		pool	

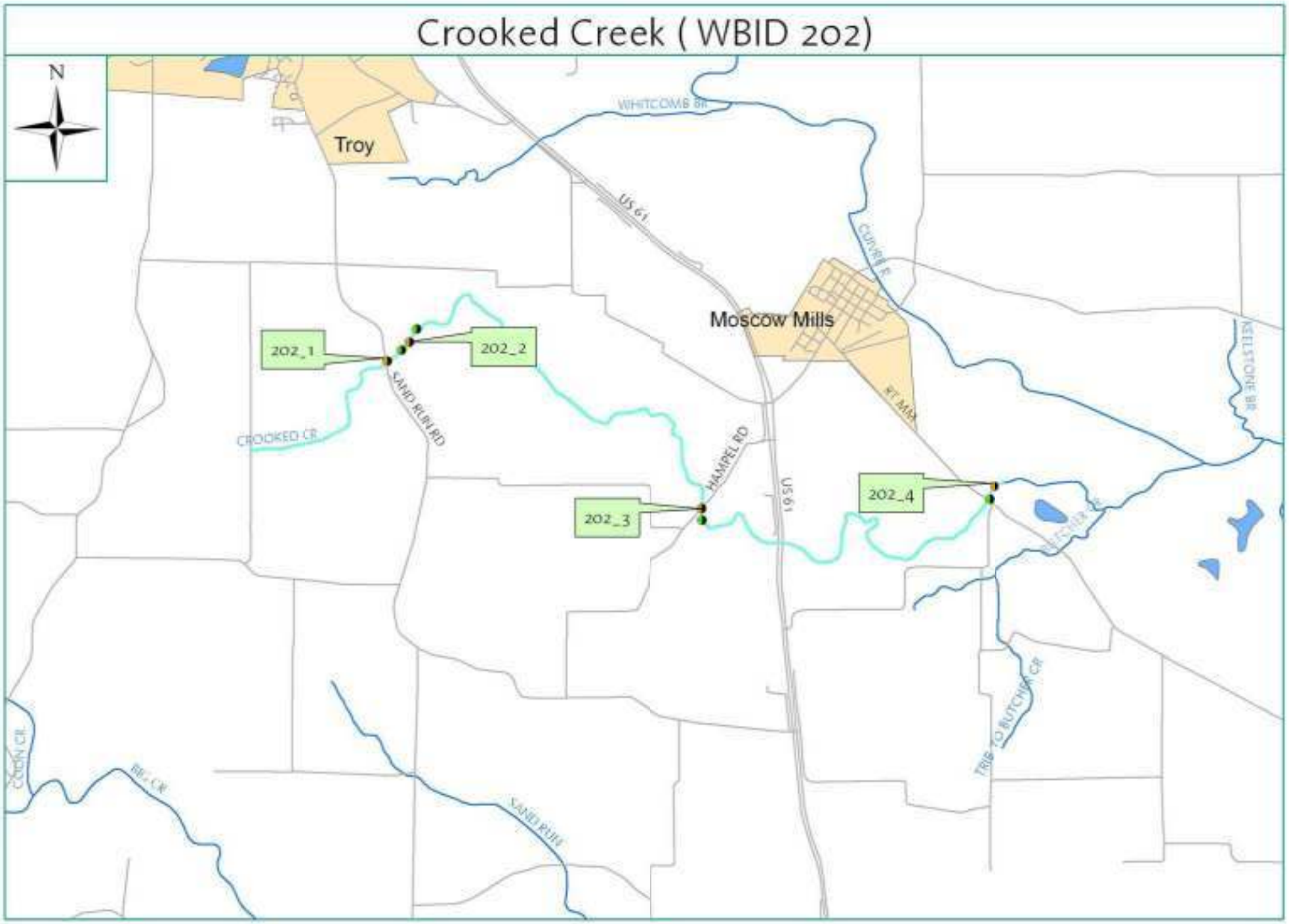
Notes: Transects will be measured beginning on left descending bank (0 depth) and finishing on right descending bank (Ldepth). This width is the wetted width.
GPS location corresponds to Transect 01 and Transect 11. Transects ordered in upstream to downstream order.
Depth measurements taken at 10 equally spaced locations along transect (determine by dividing wetted width by ten)
Mark dry depth measurements as 0; record actual measurements to 0.01 meter unless depth is too deep to measure (then record as > 1)
All measurements to be taken to the nearest 0.01 meter.

① interested area- couldn't get any better accuracy

RWC 10-18-07

Signed: [signature] Date: 10/01/07

Crooked Creek (WBID 202)




WBID 0202
Site 01
Trans 01
Upstream


WBID 0202
Site 02
Trans 01
Upstream


WBID 0202
Site 04
Trans 01
dnstream


WBID 0202
Site 01
Trans 01
dnstream


WBID 0202
Site 02
Trans 02
upstream
Field road


WBID 0202
Site 03
Trans 01
dnstream


WBID 0202
Site 02
Trans 01
dnStream


WBID 0202
Site 03
Trans 01
upstream


WBID 0202
Site 04
Trans 01
Upstream